

STATUS OF BINGHAM'S MORNING-GLORY IN THE LIGHT OF ITS REDISCOVERY

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ABSTRACT

Calystegia sepium (L.) R. Br subsp. *binghamiae* (Greene) Brummitt (Convolvulaceae), until recently presumed extinct, is elevated to species status. The basionym *Convolvulus binghamiae* Greene was published without identifying a type; therefore, a lectotype is selected from among the specimens cited in Greene's description.

Key Words: *Calystegia sepium* subsp. *binghamiae*, Convolvulaceae, lectotype, new combination, rare species.

Calystegia sepium (L.) R. Br subsp. *binghamiae* (Greene) Brummitt has been presumed extinct (California Native Plant Society 2011) until its rediscovery in May 2011 in the City of Chino, San Bernardino County, California. The rediscovery and subsequent conservation efforts will be described elsewhere by others. The availability of new specimens and live material prompted a taxonomic review, which indicates that recognition at the species level is warranted.

TAXONOMIC TREATMENT

Calystegia binghamiae (Greene) Brummitt, comb. nov.—Basionym: *Convolvulus binghamiae* Greene, Bull. Calif. Acad. Sci. 2: 417. 1887. Greene referred to collections by Bingham and himself "in marshy places about Burton's Mound in Santa Barbara," but did not cite the specimens. Synonyms: *Convolvulus sepium* var. *binghamiae* (Greene) Jepson, Fl. Calif. 3:118. 1939. *Calystegia sepium* subsp. *binghamiae* (Greene) Brummitt, Ann. Missouri Bot. Gard. 216. 1965.—Type: USA, California, Santa Barbara Co. City of Santa Barbara, August 1886, Mrs. R.F. Bingham s.n. UC 335392 (lectotype chosen here; isolectotype: Mrs. R.F. Bingham s.n., Columbian Collection F). Jepson cited Bingham's collection, but did not specify the UC or the F specimen as the lectotype.

Review

Convolvulus binghamiae Greene (Convolvulaceae) was described from specimens collected by Mrs. R. F. Bingham and E. L. Greene in Santa

Barbara, coastal southern California, in 1886. In 1965 Brummitt transferred it to the genus *Calystegia* R. Br. and ranked it as a subspecies within *C. sepium* (L.) R. Br., a decision he has regretted since. Its only verified localities are coastal regions of Santa Barbara and Los Angeles counties and Chino Creek, San Bernardino County, all in southern California (Consortium of California Herbaria 2011). Abrams (1951) also mentioned it extending to Orange County. We have seen specimens from Bolsa Chica (*L.M. Booth 1214*, POM) and east of Huntington Beach (*L.M. Booth 1359*, POM) that were labeled as *Convolvulus binghamiae* or *C. sepium* subsp. *binghamiae* as of 1951. Both of these were annotated by Brummitt as *Calystegia sepium* subsp. *linnophila* (Greene) Brummitt. We are not aware of any other records from Orange County.

One of us, Brummitt, has worked on this genus for many years, both in the herbarium and in the field. In 1998 he determined material at RSA as *Calystegia binghamiae*, adopting specific rank, but, in view of the lack of clear evidence in the very sparse material available to him, he did not publish this name. In *The Jepson Manual* (Brummitt 1993) and its second edition (Baldwin et al. 2012), which went to press before the rediscovery was appreciated, he retained subspecific rank under *C. sepium*. However, he has now examined the recent specimen collected in Chino (*J.M. Wood 4092*, K), as well as Greene's original description, and photographs of the original material, and as a result is now convinced that inclusion in *C. sepium* is inappropriate.

In *C. sepium*, with numerous subspecies in pan-tropical regions of the world, the large paired bracteoles are inserted close to the calyx and largely overlap and conceal it. This seems to be

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an apomorphy suggesting a derived position in the likely evolution of the genus. *Calystegia binghamiae*, by contrast, usually (see below) has smaller, much narrower bracteoles, with at least one of them inserted remote from the calyx. Such bracteoles are characteristic of a number of species of the *Calystegia* complex that is endemic to California. This character is not found elsewhere among *Calystegia* taxa, and is thought to represent a more plesiomorphic condition. *Calystegia sepium* may well be a polyphyletic taxon (Brummitt 1963) even without including *C. binghamiae*, and would probably be even more so with *C. binghamiae* included (the taxonomic details of the Californian species in the 1963 thesis were based on inadequate herbarium material and have been superseded by the author in more recent work). The rhizomatous habit, which *C. binghamiae* shares with *C. sepium*, apparently evolved independently within the California *Calystegia* lineage.

Although available specimens referable to *C. binghamiae* are rather limited in number, we have noted surprising variation in both bracteole and leaf shape characters. The bracteoles on the original collections by Bingham and Greene from Santa Barbara are broadly elliptic, 8–12 × 4–8 mm, and inserted almost adjacent to the sepals (probably influencing earlier decisions to include the taxon in *C. sepium*). They differ markedly, however, from those of *C. sepium* in being only about half as long as the sepals. All specimens we have seen from further east have linear to narrowly elliptic bracteoles with at least one inserted clearly below the sepals. Field observations at different times by one of us (J. M. Wood) on the newly located population at Chino have noted that early in the season the bracteoles tend to be more similar to those of the specimens collected by Bingham and Greene in Santa Barbara, whereas later in the season they are much narrower with at least one of them usually remote from the sepals. A good illustration of the latter may be seen in Abrams (e.g., Fig. 3855, 1951).

The leaves on the material from Santa Barbara have relatively well developed posteriorly-directed basal lobes with a tendency to a parallel-sided sinus. Ivan Johnston's specimens, collected at Chino Creek in 1917 (1274, below) have very similar leaves. However, the new collection from Chino, *J.M. Wood 4092*, has poorly developed basal lobes (especially on young leaves) with a broadly rounded sinus or almost cuneate leaf base. This is unlike anything found in *C. sepium*. Further specimens or observations on both leaves and bracteoles would be of interest.

While excluding *Calystegia binghamiae* from *C. sepium*, one must consider whether it is possible to regard it as conspecific with any other Californian species, but this does not seem to be

the case. Indeed it is not clear which of the Californian taxa would be most similar based on character states of the rhizomes, pubescence, leaves and bracteoles. An annotation made by Brummitt in 1973 on one the Johnston specimens at RSA suggested it was a hybrid possibly between *C. sepium* subsp. *limnophila* and *C. occidentalis* (Gray) Brummitt subsp. *fulcrata* (Gray) Brummitt or *C. longipes* (Watson) Brummitt, but this is now discounted.

One misidentified specimen, *R. Zembal s.n. 21 May 1977* RSA, labeled as *Calystegia sepium* subsp. *binghamiae* and reported as such in California Department of Fish and Game (2011), is *C. macrostegia* (Greene) Brummitt. One of us (S. D. White) has annotated the specimen and entered the correction on the Consortium of California Herbaria web site.

Calystegia binghamiae has been known by the common names "Santa Barbara morning-glory" (Abrams 1951) and "Bingham's false-bindweed" (USDI Natural Resources Conservation Service 2011). Its geographic range is (or was) wider than the first common name implies, and the native California *Calystegia* species are commonly known as morning-glories rather than false-bindweeds (Brummitt 1993). Therefore, we suggest the common name "Bingham's morning-glory." Mrs. R.F. Bingham was a naturalist of the Santa Barbara area, and published notes on the local vascular flora, marine algae, natural history, and medicinal plants (e.g., Bingham 1887, 1890). A genus of marine algae, *Binghamiella*, is named in honor of a Mrs. C. P. Bingham of the Santa Barbara area in the 1870s (Setchell and Dawson 1941); this may have been the same Mrs. Bingham, perhaps identifying herself at times by her husband's initials.

Specimens Examined

USA, CALIFORNIA. **Santa Barbara Co.:** Santa Barbara, August 1886, *Mrs. R.F. Bingham s.n.* (UC 335392 lectotype chosen here; F, presumed duplicate of previous cited collection; photos K, RSA); Santa Barbara, 1886 *E.L. Greene s.n.* NDG 39692, and July 1886, *E.L. Greene s.n.* NDG 39691 and 39693; photos K, RSA); lagoon near ocean, Ellwood, May 30 [no year] *Alice Eastwood s.n.* (UC 879470). **Los Angeles Co.:** Riveria [probably what is now Pico Rivera], 1 May 1902, *Anstruther Davidson 1892* (RSA; mixed collection with one stem of *C. binghamiae* including leaves, one flower, and one bud, mounted with several *C. sepium* stems); near University Station [presumably a Pacific Electric station near the USC campus], 1899, *Anstruther Davidson 2144* (RSA). **San Bernardino Co.:** Chino Creek, 30 May 1917, *Ivan Johnston 1274* (two sheets at RSA/POM; one at UC); city of Chino, SE corner of Edison Ave. and Oaks Ave., near

entrance to Chaffey college campus, ca. 2.5 mi N of Chino Creek (Prado Basin), irrigated landscaped area adjacent to ruderal grasslands, 17 May 2011, *Justin M. Wood* 4090 (to be distributed) and 4092 with *S.D. White, N. Gale & A. Parikh* (K, RSA; one duplicate to be distributed). We understand that at least one other collection has been made at the Chino site this year, but we have not seen it.

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